

PATENT ABSTRACTS OF JAPAN

(11)Publication number : 10-005267

(43)Date of publication of application : 13.01.1998

(51)Int.Cl.

A61F 7/08

A61F 7/00

A61F 7/08

A61F 7/08

A61F 7/08

A61N 1/00

(21)Application number : 08-165664

(71)Applicant : MATSUSHITA ELECTRIC IND CO
LTD

(22)Date of filing : 26.06.1996

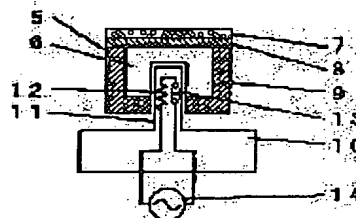
(72)Inventor : GANJI NOBUO
OMORI HIDEKI
YAMASHITA HIDEKAZU
OHASHI MASAHARU

(54) WARM MOXIBUSTOR UNIT

(57)Abstract:

PROBLEM TO BE SOLVED: To provide a simple and convenient warm moxibustor unit without using fire and not requiring drawing an electric cord around, by warming a warm moxibustor with a heat storage means, a heat transfer control means, and an adhesive part by a heating means inside or outside the warm moxibustor and storing heat and sticking the moxibustor on an affected part.

SOLUTION: A warm moxibustor 5 comprises a heat storage means made of a copper block 6, a heat transfer control means 8 to properly control the quantity of heat transfer and to prevent a user from feeling hot between a sticking part 7 to stick the warm moxibustor on the skin and the heat storage means 6, and an insulating material 9 wound around the heat transfer control means 8 to enable the user to hold the warm moxibustor in a hand. A heating bed 10 has an electric heater 12 and a thermostat 13 built in the tip end of a bar 11, and heats the moxibustor up to a proper temperature by a commercial power source 14. The heated warm moxibustor is put off and used stuck on an affected part. Thus, a warming heat pattern the same as that of a real moxibustor can be obtained.



LEGAL STATUS

[Date of request for examination] 19.12.2002

[Date of sending the examiner's decision of
rejection] 04.07.2006

[Kind of final disposal of application other than

the examiner's decision of rejection or
application converted registration]
[Date of final disposal for application]
[Patent number]
[Date of registration]
[Number of appeal against examiner's decision
of rejection]
[Date of requesting appeal against examiner's
decision of rejection]
[Date of extinction of right]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.

2.*** shows the word which can not be translated.

3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] A heating means, an accumulation means, a heat-conduction adjustment device, and the hot moxa machine that comes to have the attachment section.

[Claim 2] A heating means is a hot moxa machine according to claim 1 which comes to have an electric heater and a temperature detection means at least.

[Claim 3] A heating means is a hot moxa machine according to claim 1 which comes to have a PTC heater at least.

[Claim 4] A heating means is a hot moxa machine according to claim 1 which comes to have an induction-heating means and a temperature detection means at least.

[Claim 5] A heating means is a hot moxa machine according to claim 1 which comes to carry out induction heating of the metal with the Curie point.

[Claim 6] An accumulation means is a hot moxa machine given in any 1 term of claims 1-5 which it comes to consist of metals.

[Claim 7] An accumulation means is a hot moxa machine given in any 1 term of claims 1-5 which it comes to consist of liquids.

[Claim 8] An accumulation means is a hot moxa machine given in any 1 term of claims 1-5 which come to use the latent heat when changing to a liquid from a solid-state.

[Claim 9] It is a hot moxa machine given in any 1 term of claims 1-8 in which a heat-conduction adjustment device establishes an opening at the time of heating and which it becomes as a configuration which an opening closes at the time of attachment.

[Claim 10] An accumulation means is a hot moxa machine according to claim 8 which will serve as supercooling when changing to a solid-state from a liquid, and will be in the febrile state according to the nucleation by the shock at the time of attachment.

[Translation done.]

* NOTICES *

JPO and INPIT are not responsible for any damages caused by the use of this translation.

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.**** shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention uses the electrical and electric equipment, and relates to the hot moxa machine which gives a warm temperature stimulus to the affected part.

[0002]

[Description of the Prior Art] The conventional electric hot moxa machine had become a configuration as shown in drawing 9 . It was what pushes a switch 3 until it devised the electric heater 2 by the nichrome wire to the point of a bracket 1 and the patient sensed the warm temperature stimulus for it. However, since the electric cord 4 was attached, it was user-unfriendly. Moreover, since fire was used for the approach of attaching fire to the moxa used from ancient times, serious cautions were required.

[0003]

[Problem(s) to be Solved by the Invention] The purpose of this invention is to offer the simple hot moxa machine which does not need to use fire and does not need to take about a power cord.

[0004]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, this invention warms and carries out accumulation of the hot moxa which sticks with an accumulation means and a heat-conduction adjustment device, and has the section with the heating means in the outside in hot moxa, and sticks it on the affected part.

[0005]

[Embodiment of the Invention] the heating means which is in the outside in hot moxa about the hot moxa which invention according to claim 1 sticks with an accumulation means and a heat-conduction adjustment device, and has the section — up to optimal temperature — warming — accumulation — carrying out — the affected part — sticking — a heat-conduction adjustment device — the same warm temperature pattern as moxa cautery is obtained [real].

[0006] Invention according to claim 2 makes a heating means cheap by making it an electric heater, and can stop heating at suitable temperature with the temperature detection means by the thermostat or the thermistor.

[0007] Invention according to claim 3 is PTC (Positive Temperature Coefficient) which electric resistance increases rapidly and shows a property whenever [constant temperature] when temperature rises a heating means. By making it a heater, it can be made what has the high dependability to which heating stops at suitable temperature with an easy configuration.

[0008] By making a heating means into an induction-heating means, as compared with a heater, since power flux density is raised, invention according to claim 4 can be heated in a short time, and it can be heated by non-contact.

[0009] By carrying out induction heating of the metal which has the Curie point for a heating means in optimal temperature, since invention according to claim 5 can also perform temperature detection by non-contact, it can be made into what has the high dependability to which heating stops at suitable temperature.

[0010] By constituting an accumulation means from a metal, invention according to claim 6 is

easy structure, and it can make it hot moxa with easy handling.

[0011] Since the amount of accumulation of according to claim 7 invention per unit weight increases by using an accumulation means as liquids, such as water, it can make hot moxa lightweight.

[0012] By using the latent heat when changing an accumulation means to a liquid from a solid-state, since the amount of accumulation of according to claim 8 invention per unit weight increases further, it can make hot moxa lightweight.

[0013] It can prevent a heat-conduction adjustment device's preparing an opening at the time of heating in invention according to claim 9, sticking, before sticking on the skin, while preventing the temperature fall of an accumulation means, before sticking on the skin because an opening closes at the time of attachment, after heating is completed, and the temperature of the section rising, and sensing hot.

[0014] It is making it not emit the heat of an accumulation means, before invention according to claim 10 serves as supercooling and sticks an accumulation means on the skin, when changing to a solid-state from a liquid, giving and carrying out the nucleation of the shock at the time of attachment, and taking out heat, and temperature can rise, after sticking on the skin.

[0015]

[Example]

(Example 1) Drawing 1 shows the configuration of the 1st example of this invention. 5 is between the accumulation means which is hot moxa and is the copper lump 6, and the attachment section 7 stuck on the skin and the accumulation means 6, adjusts the amount of heat conduction moderately, and consists of a heat-conduction adjustment device 8 it is made not to sense hot, and a heat insulator 9 wound around the surroundings of an accumulation means so that it could have hot moxa, without burning oneself by hand. 10 is the susceptor which heats hot moxa 5, builds in an electric heater 12 and a thermostat 13 at the tip of a rod 11, and heats them to optimal temperature by the source power supply 14.

[0016] The hot moxa 5 heated in the above-mentioned hot moxa machine as shown in drawing 2 is removed, and it is used in the attachment section 7, sticking on the affected part. that drawing 3 indicates time amount progress of temperature to be — it is — 15 — time amount progress of the skin temperature when carrying out moxa cautery is shown. moxa burns — be alike and hang — it gets warm gradually from temperature and this invention which comes to be alike of a maximum temperature at 45 to 50 degrees C also reproduces this temperature progress. It is sensed hot that the hot moxa of a maximum temperature is stuck from the beginning. Moreover, at once, if the good accumulation means of heat conduction is attached to the direct skin, since the temperature of the skin rises to propagation and a breath, heat will attach the heat-conduction accommodation means 8, and will adjust the heating value which gets across to the skin. 16 shows time amount progress of the temperature of an accumulation means. Initial temperature of an accumulation means is made into about 60 degrees C, with the heat-conduction accommodation means 8, heat is told to the skin little by little and temperature is raised. If skin temperature will rise gradually, a maximum temperature will become 45 to 50 degrees C, if it carries out like this, and the heat by which accumulation was carried out is emitted, temperature will fall with an accumulation means. In addition, as shown in drawing 1, time amount is taken until heat reaches the whole accumulation means by sticking an accumulation means and becoming hot from the direction of the section and the contrary at breadth and a heat-conduction adjustment device, and skin temperature rises gradually further here.

[0017] (Example 2) Drawing 4 incorporated PTC heater 18 into hot moxa 17, inserts an electrode 19 in a connector 20, and adds and heats a source power supply 21. If it becomes 60 degrees C with the property of PTC, calorific value will decrease and it will become constant temperature. Thus, it is used like an example 1, sticking the heated hot moxa on the skin of the affected part. Thus, reliable hot moxa is realizable with an easy configuration.

[0018] (Example 3) Drawing 5 heats a hot metal 23 by the field generated from an induction coil 22. As compared with a heater, since power flux density is raised, it can heat in a short time. Like an example 2, with an electrode, there is no need of supplying the electrical and electric

equipment, and it can heat by non-contact. Therefore, poor heating by the defect of electric contact does not occur. A hole is made in some heat insulators 9, and by contacting a thermistor 24 from there, the temperature of the accumulation means 6 is detected, the current of an induction coil 22 is stopped at suitable temperature, and it heats to constant temperature.

[0019] If the metal which has the Curie point in optimal temperature is used for a hot metal 23 here, temperature detection can also be performed now by non-contact, and a thermistor will become unnecessary. Then, the heat poor contact of the accumulation means 6 and a thermistor is lost, and it can be made what has a good temperature precision. By beginning, if the principle of temperature detection is explained, when temperature is low, as for a hot metal, a skin depth becomes deep by becoming nonmagnetic if it becomes Curie temperature, although a skin depth is shallow, it flows and, as for the induced current, the front face of a hot metal is heated at ferromagnetism, and the induced current flows the inside of the copper 6 which is an accumulation means. The equivalent impedance of a heating coil 22 becomes small because the path where magnetic coupling is carried out to a heating coil 22, and the induced current flows changes to copper with low electric resistance from a hot metal with high electric resistance. Temperature detection can be performed by measuring this impedance.

[0020] (Example 4) If an accumulation means is used as a metal lump, structure is easy and manufacture and handling are easy structure. An ingredient is cheap and the large copper of the specific heat and still more nearly lightweight aluminum are suitable for it. Moreover, since the amount of accumulation per unit weight increases by putting the liquids 25, such as water of specific heat 4.2 J/gK, into the copper container 26, and using an accumulation means from the copper of specific heat 0.43 J/gK as shown in drawing 6, hot moxa can be made lightweight. The accumulation temperature of hot moxa can be used without boiling also with cheap water, since it is about 60 to 70 degrees C. If the latent heat when furthermore changing an accumulation means to a liquid from a solid-state is used, since the amount of accumulation per unit weight will increase, hot moxa can be made lightweight and user-friendliness can be improved. The paraffin which has the melting point in 60 to 70 degrees C is suitable.

[0021] (Example 5) Drawing 7 establishes the movable opening 27 in the heat-conduction adjustment device 8. When there is heat capacity in the attachment section 7 and some are stuck on the skin, it is sensed hot that that to which temperature has already risen is attached to the skin. It is there being an opening 27 at the time of heating, and insulating it, sticking the heat of the accumulation means 6 from this time, as an opening's 27 closes at the time of attachment, and making it conduct in the section 7, in order to cancel this, and after heating is completed, before sticking on the skin, while preventing the temperature fall of the accumulation means 6, it protects sticking, before sticking on the skin, and the temperature of the section 7 rising, and sensing hot.

[0022] Drawing 8 is drawing showing time amount progress of temperature. Drawing 8 (a) of 27 opening is the case where drawing 8 (b) has an opening 27, when there is nothing. e is the period after sticking on the skin a period after heating ends c until it sticks on the skin, and at the moment of sticking d on the skin. 28 is the temperature of an accumulation means in drawing 8 (a). It stuck in Period c, heat moved to the section, and it is cooling down gradually. 29 is the temperature of the attachment section and reception temperature is rising heat from the accumulation means in Period c. 30 is the temperature of the skin, and it sticks on d at the moment of sticking on the skin, the heat of the section is got, temperature rises rapidly, and it is sensed hot. 31 is the temperature of an accumulation means in drawing 8 (b). Since there is an opening in Period c, most temperature falls cannot be found. 32 is the temperature of the attachment section and hardly carries out a temperature rise also in Period c. From d time which stuck on the skin and closed the opening, heat is got from an accumulation means and temperature rises. 33 is the temperature of the skin and temperature rises gradually from d time. it is the same as that of temperature progress of moxa cautery with this true.

[0023] The configuration of hot moxa <A href="/Tokujitu/tjitemdrw.ipdl?"

N0000=237&N0500=1E_N/;> ???=98-///&N0001=542&N0552=9&N0553=000008" (Example 6) It carries out like TARGET="tjitemdrw"> drawing 6, and when changing to a solid-state from a liquid, before sticking an accumulation means on the skin like sodium acetate 3 monohydrate

using the matter used as supercooling, it is made not to emit the heat of an accumulation means. it becomes [to which temperature will rise thoroughly after sticking on the skin, and temperature can rise and lights if the nucleation of the shock is given and carried out at the time of attachment and heat is taken out / true] being the same as that of temperature progress of moxa cautery.

[0024]

[Effect of the Invention] the heating means which is in the outside in hot moxa about the hot moxa which according to invention according to claim 1 sticks with an accumulation means and a heat-conduction adjustment device, and has the section — up to optimal temperature — warming — accumulation — carrying out — the affected part — sticking — a heat-conduction adjustment device — the same warm temperature pattern as moxa cautery can be obtained [real].

[0025] According to invention according to claim 2, by making a heating means into an electric heater, it is cheap and heating can stop at suitable temperature with the temperature detection means by the thermostat or the thermistor.

[0026] According to invention according to claim 3, a heating means can be made into what has the high dependability to which heating stops at suitable temperature with an easy configuration by making it a PTC heater.

[0027] By making it an induction-heating means, as compared with a heater, since power flux density is raised, according to invention according to claim 4, a heating means can be heated in a short time. Moreover, it strokes using an electrode and can heat by non-contact.

[0028] According to invention according to claim 5, by carrying out induction heating of the metal which has the Curie point for a heating means in optimal temperature, since temperature detection can also be performed by non-contact, it can be made what has the high dependability to which heating stops at suitable temperature.

[0029] According to invention according to claim 6, by constituting from a metal, structure is easy and can use an accumulation means as a hot moxa machine with easy handling.

[0030] Since the amount of accumulation per unit weight increases by using an accumulation means as a liquid according to invention according to claim 7, hot moxa can be made lightweight.

[0031] According to invention according to claim 8, by using the latent heat when changing an accumulation means to a liquid from a solid-state, since the amount of accumulation per unit weight increases further, hot moxa can be made lightweight.

[0032] It prevents a heat-conduction adjustment device's preparing an opening at the time of heating according to invention according to claim 9, sticking, before sticking on the skin, while it is making it an opening close at the time of attachment, and preventing the temperature fall of an accumulation means, before sticking on the skin, after heating is completed, and the temperature of the section rising, and sensing hot.

[0033] after being according to invention according to claim 10, an accumulation means' serving as supercooling, when changing to a solid-state from a liquid, and giving and carrying out the nucleation of the shock at the time of attachment, and making it generate heat, and sticking on the skin — sticking — the temperature of the section — going up — the same temperature pattern as moxa cautery is obtained [true].

[Translation done.]

(19) 日本国特許庁 (J P)

(12) 公開特許公報 (A)

(11) 特許出願公開番号

特開平10-5267

(43) 公開日 平成10年(1998) 1月13日

(51) IntCl. ⁶	識別記号	庁内整理番号	F I	技術表示箇所
A 6 1 F	7/08	3 3 2	A 6 1 F	7/08
	7/00	3 2 6		7/00
	7/08	3 1 0		7/08
		3 2 0		
		3 3 1		

審査請求 未請求 請求項の数10 O L (全 5 頁) 最終頁に続く

(21) 出願番号 特願平8-165664

(22) 出願日 平成8年(1996) 6月26日

(71) 出願人 000005821

松下電器産業株式会社
大阪府門真市大字門真1006番地

(72) 発明者 元治 伸夫

大阪府門真市大字門真1006番地 松下電器
産業株式会社内

(72) 発明者 大森 英樹

大阪府門真市大字門真1006番地 松下電器
産業株式会社内

(72) 発明者 山下 秀和

大阪府門真市大字門真1006番地 松下電器
産業株式会社内

(74) 代理人 弁理士 滝本 智之 (外1名)

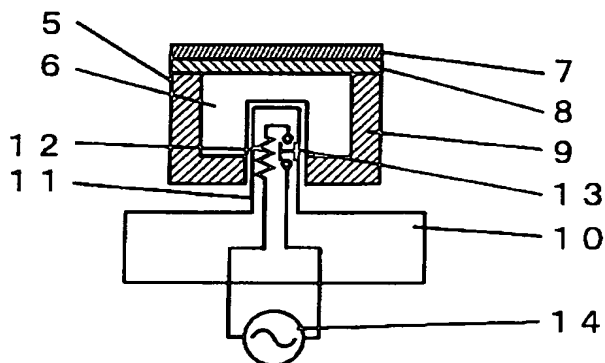
最終頁に続く

(54) 【発明の名称】 温灸器

(57) 【要約】

【課題】 火を使わず、電気コードを引き回す必要もない、簡便な温灸器を提供すること。

【解決手段】 蓄熱手段6と熱伝導調整手段8と貼り付け部7を有する温灸5を、温灸内または外にある加熱手段12で適温まで温め蓄熱して患部に貼り付け、熱伝導調整手段8によって本物のお灸と同様の温熱パターンを得る。



- 5 温灸
- 6 蓄熱手段
- 7 貼り付け部
- 8 熱伝導調整手段
- 9 断熱部
- 12 電気ヒーター
- 13 サーモスタット

【特許請求の範囲】

【請求項 1】 加熱手段、蓄熱手段、熱伝導調整手段、及び貼り付け部を有してなる温灸器。

【請求項 2】 加熱手段は、少なくとも電気ヒーターと温度検知手段とを有してなる請求項 1 記載の温灸器。

【請求項 3】 加熱手段は、少なくとも PTC ヒーターを有してなる請求項 1 記載の温灸器。

【請求項 4】 加熱手段は、少なくとも誘導加熱手段と温度検知手段とを有してなる請求項 1 記載の温灸器。

【請求項 5】 加熱手段は、キュリー点を持つ金属を誘導加熱してなる請求項 1 記載の温灸器。

【請求項 6】 蓄熱手段は、金属で構成されてなる請求項 1～5 のいずれか 1 項に記載の温灸器。

【請求項 7】 蓄熱手段は、液体で構成されてなる請求項 1～5 のいずれか 1 項に記載の温灸器。

【請求項 8】 蓄熱手段は、固体から液体に変わる時の潜熱を利用してなる請求項 1～5 のいずれか 1 項に記載の温灸器。

【請求項 9】 熱伝導調整手段は、加熱時は空隙を設け、貼り付け時は空隙が閉じる構成としてなる請求項 1～8 のいずれか 1 項に記載の温灸器。

【請求項 10】 蓄熱手段は、液体から固体に変わる時に過冷却となり、貼り付け時のショックによる核生成により発熱状態となる請求項 8 に記載の温灸器。

【発明の詳細な説明】

【0001】

【発明の属する技術分野】本発明は、電気を利用し、患部に温熱刺激を与える温灸器に関する。

【0002】

【従来の技術】従来の電気温灸器は、図 9 に示すような構成になっていた。腕木 1 の先端部にニクロム線による電気ヒーター 2 をしかけ、患者が温熱刺激を感じるまでスイッチ 3 を押すものであった。しかし、電気のコード 4 が付属するため使い勝手の悪いものであった。また昔から用いられているもぐさに火を付ける方法は、火を使うので大変な注意が必要であった。

【0003】

【発明が解決しようとする課題】本発明の目的は、火を使わず、電気コードを引き回す必要もない、簡便な温灸器を提供することにある。

【0004】

【課題を解決するための手段】上記課題を解決するために本発明は、蓄熱手段と熱伝導調整手段と貼り付け部を有する温灸を、温灸内または外にある加熱手段で温めて蓄熱し、患部に貼り付けるものである。

【0005】

【発明の実施の形態】請求項 1 記載の発明は、蓄熱手段と熱伝導調整手段と貼り付け部を有する温灸を、温灸内または外にある加熱手段で適温まで温め蓄熱して患部に貼り付け、熱伝導調整手段によって本物のお灸と同様の

温熱パターンを得るものである。

【0006】請求項 2 記載の発明は、加熱手段を、電気ヒーターにすることによって安価にし、サーモスタットやサーミスタによる温度検知手段によって適当な温度で加熱を止めるようにすることができる。

【0007】請求項 3 記載の発明は、加熱手段を、温度が上昇すると急激に電気抵抗が増大して定温度特性を示す PTC (Positive Temperature Coefficient) ヒーターにすることによって、簡単な構成で適当な温度で加熱が止まる信頼性の高いものにすることができる。

【0008】請求項 4 記載の発明は、加熱手段を、誘導加熱手段にすることにより、ヒーターと比較し、電力密度が上げられることから短時間で加熱でき、また非接触で加熱できる。

【0009】請求項 5 記載の発明は、加熱手段を、適温にキュリー点を持つ金属を誘導加熱することで、温度検出も非接触で行えるため、適当な温度で加熱が止まる信頼性の高いものにすることができる。

【0010】請求項 6 記載の発明は、蓄熱手段を、金属で構成することにより、構造が簡単で取扱いが容易な温灸にすることができる。

【0011】請求項 7 記載の発明は、蓄熱手段を、水などの液体にすることにより、単位重量あたりの蓄熱量が増えるので、温灸を軽量にすることができる。

【0012】請求項 8 記載の発明は、蓄熱手段を、固体から液体に変わる時の潜熱を利用することで、さらに単位重量あたりの蓄熱量が増えるので、温灸を軽量にすることができる。

【0013】請求項 9 記載の発明は、熱伝導調整手段は、加熱時は空隙を設け、貼り付け時は空隙が閉じるようにすることで、加熱が終了してから皮膚に貼り付ける以前に蓄熱手段の温度低下を防ぐと共に、皮膚に貼り付ける以前に貼り付け部の温度が上昇して熱く感じるのを防ぐことができる。

【0014】請求項 10 記載の発明は、蓄熱手段を、液体から固体に変わる時に過冷却となり皮膚に貼り付ける以前に蓄熱手段の熱を放出しないようにし、貼り付け時にショックを与えて核生成させて熱を取り出すことで、皮膚に貼り付けた後に温度が上昇するようにできる。

【0015】

【実施例】

（実施例 1）図 1 は本発明の第 1 の実施例の構成を示すものである。5 は温灸で、銅の塊 6 である蓄熱手段と、皮膚に貼り付ける貼り付け部 7 と蓄熱手段 6 の間であり、熱伝導量を適度に調整し、熱く感じないようにする熱伝導調整手段 8 と、温灸を手で火傷せずに持てるように蓄熱手段の周りに巻いた断熱材 9 とよりなる。10 は温灸 5 を加熱する加熱台で、棒 11 の先端に電気ヒーター 12 とサーモスタット 13 を内蔵し、商用電源 14 によって適温まで加熱する。

【0016】上記温灸器を、図2に示すように、加熱された温灸5を取り外し、貼り付け部7で患部に貼り付けて使用する。図3は温度の時間経過を示すもので、15はお灸をしたときの皮膚温度の時間経過を示すものである。もぐさが燃焼するにつれ、体温からじわじわと温まり、最高温度は45から50℃でになる、本発明もこの温度経過を再現する。最初から最高温度の温灸を貼り付けると熱く感じる。また熱伝導の良い蓄熱手段を直接皮膚に付けると一度に熱が伝わり、一気に皮膚の温度が上昇するので、熱伝導調節手段8を付け、皮膚に伝わる熱量を調節する。16は蓄熱手段の温度の時間経過を示すものである。蓄熱手段の初期温度を60℃程度にしておき、熱伝導調節手段8によって少しずつ皮膚に熱を伝え温度を上げていく。こうすると皮膚温度は徐々に上昇し最高温度は45から50℃となり、蓄熱された熱が放出されると蓄熱手段と共に温度が下がる。なおここで、図1に示すように蓄熱手段を貼り付け部と反対の方から熱することにより、熱が蓄熱手段全体に広がり、熱伝導調節手段に到達するまで時間がかかり、さらに皮膚温度はじわじわと上昇する。

【0017】（実施例2）図4は、温灸17の中にPTCヒーター18を組み込んだもので、電極19をコネクタ20に差し込んで商用電源21を加え加熱する。PTCの特性により60℃になると発熱量が減少し一定温度になる。このようにして加熱された温灸を実施例1のように患部の皮膚に貼り付けて使用する。このように簡単な構成で信頼性の高い温灸を実現できる。

【0018】（実施例3）図5は、誘導コイル22から発生する磁界によって加熱金属23を加熱するものである。ヒーターと比較し、電力密度が上げられることから短時間で加熱できる。実施例2のように電極によって電気を供給する必要が無く非接触で加熱できる。従って電気接点の不良による加熱不良が発生しない。断熱材9の一部に穴を開け、そこからサーミスタ24を接触させることによって蓄熱手段6の温度を検出し、適当な温度で誘導コイル22の電流を止めて一定温度に加熱する。

【0019】ここで加熱金属23に適温にキュリー点を持つ金属を用いると、温度検知も非接触で行えるようになり、サーミスタが不要になる。すると蓄熱手段6とサーミスタとの熱接触不良がなくなり温度精度の良いものにすることができる。温度検知の原理を説明すると、始め温度の低いときは加熱金属は強磁性で表皮深さが浅く誘導電流は加熱金属の表面を流れて加熱するが、キュリー温度になると非磁性になり表皮深さが深くなって、誘導電流は蓄熱手段である銅6の中を流れる。加熱コイル22と磁気結合して誘導電流が流れる通路が、電気抵抗の高い加熱金属から電気抵抗の低い銅に変わること、加熱コイル22の等価インピーダンスが小さくなる。このインピーダンスを測定することで温度検知ができる。

【0020】（実施例4）蓄熱手段を、金属の塊にする

と構造が簡単で製造も取扱いも容易である。材料は安価で比熱の大きい銅や、さらに軽量のアルミが適当である。また図6に示すように蓄熱手段を比熱0.43J/g Kの銅より比熱4.2J/g Kの水などの液体25を銅の容器26に入れて用いることにより、単位重量あたりの蓄熱量が増えるので温灸を軽量にすることができる。温灸の蓄熱温度は60から70℃程度なので安価な水でも沸騰すること無く利用できる。さらに蓄熱手段を固体から液体に変わる時の潜熱を利用すると、単位重量あたりの蓄熱量が増えるので、温灸を軽量にして使い勝手を良くすることができる。融点が60から70℃にあるパラフィン等が適当である。

【0021】（実施例5）図7は、熱伝導調整手段8に移動可能な空隙27を設けたものである。貼り付け部7には多少とも熱容量があり、皮膚に貼り付ける時点で既に温度が上昇しているものを皮膚に付けると熱く感じる。これを解消するため、加熱時は空隙27があり断熱しておき、貼り付け時は空隙27が閉じるようにしてこの時点から蓄熱手段6の熱を貼り付け部7に伝導するようにすることで、加熱が終了してから皮膚に貼り付ける以前に蓄熱手段6の温度低下を防ぐと共に、皮膚に貼り付ける以前に貼り付け部7の温度が上昇して熱く感じるのを防ぐ。

【0022】図8は温度の時間経過を示す図である。図8(a)は空隙27が無い場合、図8(b)は空隙27が有る場合である。cは加熱が終了してから皮膚に貼り付けるまでの期間、dは皮膚に貼り付けた瞬間、eは皮膚に貼り付けた後の期間である。図8(a)で28は蓄熱手段の温度である。期間cで貼り付け部に熱が移動し、徐々に冷めている。29は貼り付け部の温度で、期間cで蓄熱手段より熱を受け取り温度が上昇している。30は皮膚の温度で、皮膚に貼り付けた瞬間dに貼り付け部の熱をもらい、急激に温度が上昇し熱く感じる。図8(b)で31は蓄熱手段の温度である。期間cでは空隙があるため温度低下はほとんど無い。32は貼り付け部の温度で、期間cでもほとんど温度上昇しない。皮膚に貼り付けて空隙を閉じたd時点より蓄熱手段から熱をもらい温度が上昇する。33は皮膚の温度で、d時点より徐々に温度が上昇する。これは本当のお灸の温度経過と同様である。

【0023】（実施例6）温灸の構成は図6のようにしておき、蓄熱手段を酢酸ナトリウム3水塩等のように、液体から固体に変わる時に過冷却となる物質を用いて、皮膚に貼り付ける以前は蓄熱手段の熱を放出しないようにしておく。貼り付け時にショックを与えて核生成させて熱を取り出すと、皮膚に貼り付けた後に温度が上昇するようにでき、点火してからじっくりと温度が上昇する本当のお灸の温度経過と同様になる。

【0024】

【発明の効果】請求項1記載の発明によれば、蓄熱手段

10

20

30

40

50

と熱伝導調整手段と貼り付け部を有する温灸を、温灸内または外にある加熱手段で適温まで温め蓄熱し、患部に貼り付け、熱伝導調整手段によって、本物のお灸と同様の温熱パターンを得ることができる。

【0025】請求項2記載の発明によれば、加熱手段を、電気ヒーターにすることによって安価で、サーモスタットやサーミスタによる温度検知手段によって適当な温度で加熱が止まるようにできる。

【0026】請求項3記載の発明によれば、加熱手段を、PTCヒーターにすることによって簡単な構成で適当な温度で加熱が止まる信頼性の高いものにすることができる。

【0027】請求項4記載の発明によれば、加熱手段を、誘導加熱手段にすることにより、ヒーターと比較し、電力密度が上げられることから短時間で加熱できる。また電極を用いなく非接触で加熱できる。

【0028】請求項5記載の発明によれば、加熱手段を、適温にキュリー点を持つ金属を誘導加熱することで、温度検出も非接触で行えるため、適当な温度で加熱が止まる信頼性の高いものにすることができる。

【0029】請求項6記載の発明によれば、蓄熱手段を、金属で構成することにより、構造が簡単で取扱いが容易な温灸器にすることができる。

【0030】請求項7記載の発明によれば、蓄熱手段を、液体にすることにより、単位重量あたりの蓄熱量が増えるので、温灸を軽量にすることができる。

【0031】請求項8記載の発明によれば、蓄熱手段を、固体から液体に変わる時の潜熱を利用することで、さらに単位重量あたりの蓄熱量が増えるので、温灸を軽量にすることができる。

【0032】請求項9記載の発明によれば、熱伝導調整*

* 手段は、加熱時は空隙を設け、貼り付け時は空隙が閉じるようにすることで、加熱が終了してから皮膚に貼り付ける以前に蓄熱手段の温度低下を防ぐと共に、皮膚に貼り付ける以前に貼り付け部の温度が上昇して熱く感じるのを防ぐ。

【0033】請求項10記載の発明によれば、蓄熱手段は、液体から固体に変わる時に過冷却となり、貼り付け時にショックを与えて核生成させて発熱させることで、皮膚に貼り付けた以後に貼り付け部の温度が上昇して本当のお灸と同様の温度パターンが得られる。

【図面の簡単な説明】

【図1】本発明の第1の実施例の温灸器の構成図

【図2】同、温灸器の使用説明図

【図3】同、温灸器の温度の時間経過を示す図

【図4】本発明の第2の実施例の温灸器の構成図

【図5】本発明の第3の実施例の温灸器の構成図

【図6】本発明の第4の実施例の温灸器の構成図

【図7】本発明の第5の実施例の温灸器の構成図

【図8】同、温灸器の温度の時間経過を示す図

【図9】従来例の温灸器の構成図

【符号の説明】

6 蓄熱手段

7 貼り付け部

8 熱伝導調整手段

9 断熱材

12 電気ヒーター

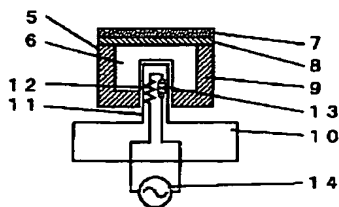
18 PTCヒーター

22 加熱コイル

23 加熱金属

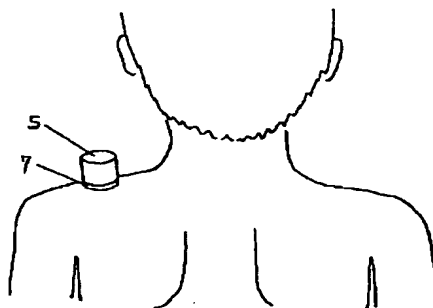
27 空隙

【図1】

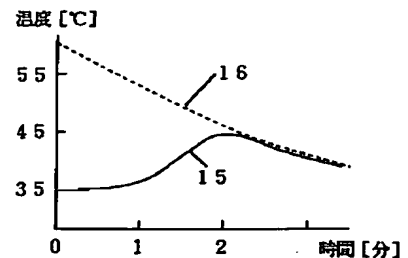


5 温灸
6 蓄熱手段
7 貼り付け部
8 熱伝導調整手段
9 断熱材
12 電気ヒーター
13 サーモスタット

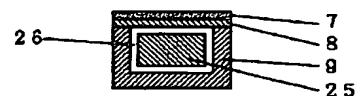
【図2】



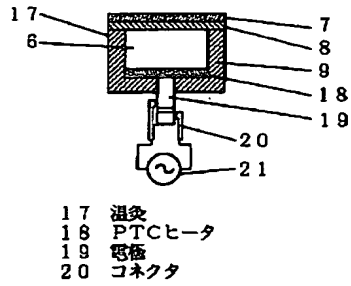
【図3】



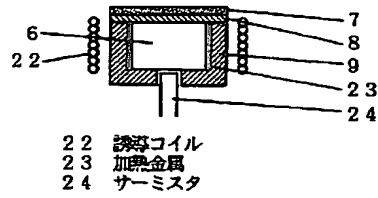
【図6】



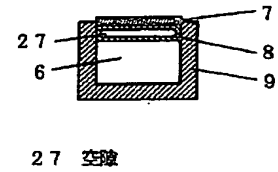
【図4】



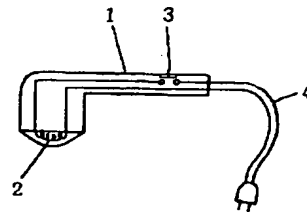
【図5】



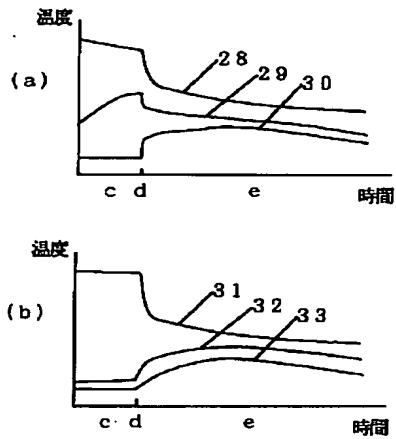
【図7】



【図9】



【図8】



フロントページの続き

(51)Int.Cl.⁶
A 6 1 N 1/00

識別記号 庁内整理番号

F I
A 6 1 N 1/00

技術表示箇所

(72)発明者 大橋 正治
大阪府門真市大字門真1006番地 松下電器
産業株式会社内